

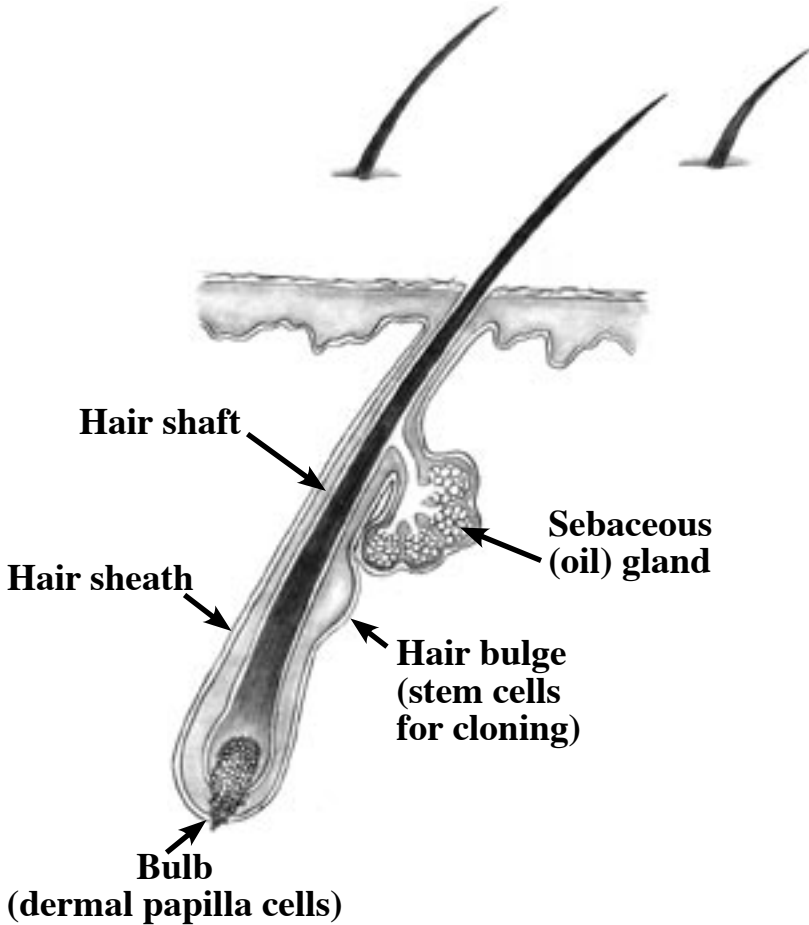
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Normal Hair Growth

Before addressing the causes and solutions to hair loss, it will be helpful to understand how hair normally grows. This is because many hair loss remedies point to aspects of normal hair growth, in particular to the shedding of hairs, as evidence of a “problem” that they can “cure.” And the many causes of hair loss and various treatments become less mysterious after gaining a basic understanding of the normal cycle of hair growth.

Each strand of hair is a complex weaving of lifeless protein produced by a teardrop-shaped hair follicle. The hair follicles are made of living cells that receive nourishment entirely from the blood supply under the skin. The hair itself is made up of completely dead cells. Dead hair shaft cells cannot be “revived” to bring your dull hair back to life as claimed by many hair products.

There are hundreds of thousands of hair follicles in the skin covering almost every part of the body. Some hair follicles produce fine almost colorless “peach fuzz” hairs, and others produce thicker pigmented hair shafts. Each hair follicle is a miniature organ that grows a single hair during a phase of growth. That single hair can last for several months or several years, depending on how the follicle has been genetically programmed. Scalp hair follicles tend to have a longer growth phase than eyelash hair follicles, for example.



There are three phases of hair growth, and the hair follicle changes significantly from phase to phase. The three phases are the anagen phase, the catagen phase, and the telogen phase.

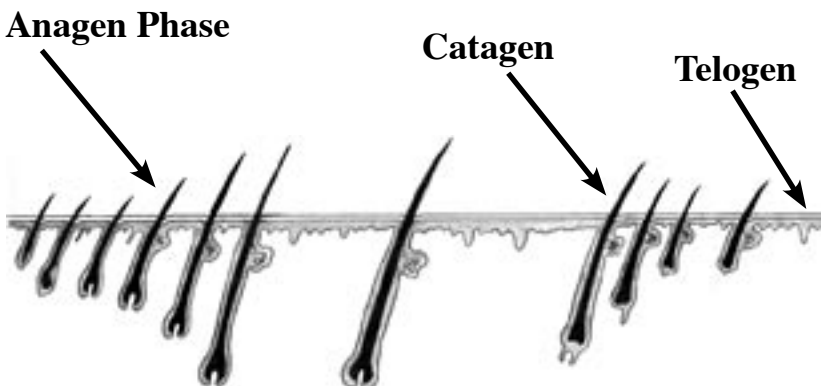
Anagen Phase: The anagen phase is the “growing” phase of a hair follicle. It begins with a miniaturized hair follicle that may or may not have recently shed the hair it was growing during the previous growth cycle. At the beginning of the anagen phase, the hair follicle starts to grow back to full size and extend deeper into the skin. A new hair bulb is formed at the base of the follicle, and inside the hair bulb specialized dermal papilla cells begin to grow a new hair shaft. If the old hair has not been shed already, the new growing hair helps “push” the old hair out of the follicle. As the new hair grows out from

the base of the follicle, it extends beyond the surface of the skin and appears as straight or curly, and with a color that can be blonde or brown or red or gray. Scalp hairs grow about one-half inch per month during the anagen phase, for a period of time typically ranging from four to six years. This is a rapid rate of cellular growth compared to most other tissues in the body.

Catagen Phase: Following the anagen phase, the hair stops growing and the hair follicle starts shrinking. This “regression” period is called the catagen phase. During the catagen phase the lower part of the hair follicle slowly disintegrates, and the hair follicle requires less nourishment from the blood supply. The structure of the hair bulb at the base of the follicle disappears, and the dermal papilla cells separate from the base of the follicle. The miniaturized hair follicle has a looser “grip” on the hair shaft, and normal body movement, grooming, or bathing may result in the hair shaft being shed at this time. The catagen phase for scalp hair follicles lasts about two to three weeks.

Hair Shedding is a normal part of the cycle of hair growth.

Telogen Phase: After the hair follicle has stopped shrinking, it enters the telogen or “resting” phase, which lasts for another three months, or so. During the telogen phase the follicle appears inactive, and the hair shaft may also be shed during this period. Shedding hairs are a normal part of the cycle of hair growth. Shed hairs may appear on bedding, on clothing, in combs and brushes, and many shed hairs simply go down the drain after shampooing. The point is that some hair loss every day is normal.



Chapter Two

At the end of the telogen phase, the hair follicle enters the anagen phase again and begins to grow back to normal size. A new hair bulb is formed and a new hair shaft begins to grow, and the cycle of hair growth continues.

While many fur-bearing animals have hair follicles with synchronized growth and shedding phases, in humans the growth phase of hair follicles are not normally synchronized with their neighbors. This means that the hair follicles on people's scalps are in different stages of growth, regression, or rest at any given time. But because the anagen (growth) phase lasts much longer than the other phases, the vast majority (ninety percent) of hair follicles on people are in some part of the growth phase, while only a small percentage are in the catagen (regression) or telogen (rest) phase. Growing hairs are not easily shed; however hair follicles in the catagen or telogen phase shed their hairs easily.

On average, young people with a full head of dark-colored hair have about 100,000 hair follicles on their scalp. Redheads often have slightly more than 100,000 scalp hair follicles, while blondes typically have fewer hair follicles. On average, about fifty to 100 hair follicles end the anagen phase each day, which is when the follicle begins to loosen its "grip" on the hair shaft, and the hair may be shed. Therefore shedding fifty to 100 hairs on any particular day is perfectly normal. Of course, about fifty to 100 hair follicles also re-enter the anagen phase each day, and begin growing new hairs as well, but this is less noticeable.